



# Motivations for suicide: Converging evidence from clinical and community samples

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## ABSTRACT

Understanding what motivates suicidal behavior is critical to effective prevention and clinical intervention. The Inventory of Motivations for Suicide Attempts (IMSA) is a self-report measure developed to assess a wide variety of potential motivations for suicide. The purpose of this study is to examine the measure's psychometric and descriptive properties in two distinct populations: 1) adult psychiatric inpatients ( $n = 59$ ) with recent suicide attempts (median of 3 days prior) and 2) community participants assessed online ( $n = 222$ ) who had attempted suicide a median of 5 years earlier. Findings were very similar across both samples and consistent with initial research on the IMSA in outpatients and undergraduates who had attempted suicide. First, the individual IMSA scales demonstrated good internal reliability and were well represented by a two factor superordinate structure: 1) Internal Motivations and 2) Communication Motivations. Second, in both samples unbearable mental pain and hopelessness were the most common and strongly endorsed motivations, while interpersonal influence was the least endorsed. Finally, motivations were similar in men and women – a pattern that previous work was not in a position to examine. Taken together with previous work, findings suggest that the nature, structure, and clinical correlates of suicide attempt motivations remain consistent across diverse individuals and situations. The IMSA may serve as a useful tool in both research and clinical contexts to quickly assess individual suicide attempt motivations.

## 1. Introduction

Suicide is a global health problem, killing nearly 800,000 people in 2016 (World Health Organization; WHO, 2019). Further, many more people make nonlethal suicide attempts. For example, recent estimates suggest that in 2017, 1.4 million American adults attempted suicide (SAMHSA, 2018). The sequelae of a suicide attempt can include hospitalization, permanent injury, restriction of liberties, and interpersonal consequences, among other negative consequences. Preventing suicide attempts is essential both to reduce suicide deaths and to reduce the pain and suffering associated with nonlethal attempts.

One pathway to reducing suicide attempts and deaths is clarifying what motivates suicidal behavior. Understanding suicide motivations could inform the identification of warning signs and improve prevention campaigns. On a community level, messaging encouraging the public to call a crisis hotline could use language that closely targets the most common suicide motivations. On an individual level, assessing an individual's suicide attempt motivations could help a clinician identify the most salient causes of a suicide attempt and focus intervention on

solutions for these problems.

Seminal theories of suicide have emphasized diverse motivations relating to psychache (i.e., unbearable pain) (Shneidman, 1993), hopelessness (Abramson et al., 2000), escape (Baumeister, 1990), burdensomeness and belongingness (Joiner, 2005; Van Orden et al., 2010) (Joiner, 2005; Van Orden et al., 2010), communication (Maris, 1981), and problem solving (Baechler, 1979). However, previous research has been limited by the lack of a measure that could assess the variety of motivations for suicide. The need for a psychometrically sound measure to assess these motivations for suicide led to the development of the Inventory of Motivations for Suicide Attempts (IMSA; May and Klonsky, 2013). The IMSA is a self-report measure of motivations for suicide attempts, including those suggested by major theories of suicide.

Thus far, the IMSA has been investigated in three samples. In one study, stable psychometric properties of the IMSA were demonstrated across a sample of undergraduates and a sample of community-dwelling adults who had attempted suicide within the past three years (May and Klonsky, 2013). The study found that unbearable pain and hopelessness were the most commonly endorsed motivations, and that IMSA scales

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were represented well by two superordinate factors: Internal Motivations (attempts characterized by escaping or relieving unmanageable internal emotions and cognitions) and Communication Motivations (attempts characterized by the desire to seek help from or influence another individual). Internal Motivations were associated with a stronger desire to die, whereas, Communication Motivations were the least commonly endorsed motivations, and associated with lower suicidal intent and attempts made in such a way that intervention from others was more likely.

A second study utilizing the IMSA explored the same questions in a small sample of adolescents admitted to the hospital for suicide attempts (May et al., 2016). A similar pattern of endorsements and factor structure was identified. This convergence of evidence from three samples provided initial support for the validity of the IMSA, the pre-eminence of unbearable pain and hopelessness in motivating suicide attempts, and a two-factor structure for attempt motivations made up of internal and communicative motivations.

### 1.1. Limitations of previous research

However, the generalizability of the previous research is limited in important ways. First, the IMSA was tested in a sample of adults who attempted a few years prior to participating. Thus, it is unknown if the endorsement and pattern of motivations differs when adults report on more recent suicide attempts compared to remote suicide attempts. Like any other event, memories of attempts are vulnerable to recall bias (Klimes-Dougan et al., 2007). Specifically, to the degree that attempt motivations recalled post-attempt are influenced by post-attempt events (e.g., response of friends and family, initiation of therapy, medical consequences). Examining motivations closer to the occurrence of the attempt is essential. Further, memories of suicide attempts themselves may be forgotten in the years following an attempt (Hart et al., 2013). The closer in time the assessment is to the actual attempt, the more likely the motivations reported will accurately reflect the motivations present at the time of the attempt and that attempts will be well captured.

Additionally, all previous studies of the IMSA were conducted with in-person administrations of the measure. It is not known how responses may vary when administration is via an anonymous online survey. Past research has revealed that responses to depression and suicide-related questions varied for some groups based on the anonymity of the survey (Anestis and Green, 2015; Warner et al., 2011) and intensity of follow-up they anticipated (King et al., 2012). Some motivations for suicide, such as attempting suicide to influence another person, may be understood as less socially desirable and thus more likely to be endorsed in an anonymous online setting than in an in-person administration.

Finally, previous research examining the utility of the IMSA used small samples which precluded testing for sex differences in suicide attempt motivations. With the exception of a few countries, such as China and India, females attempt suicide three to four times more often than males, whereas males die from suicide three to four times more often than females (Nock et al., 2008; WHO, 2014). In terms of attempt characteristics, men often attempt suicide using more lethal means (e.g., firearms) and may demonstrate a stronger intent to die (Beautrais, 2002; Nock et al., 2008; Nock and Kessler, 2006). Despite these differences in suicide rates and characteristics, it is unclear if motivations for suicide differ across sex. Knowledge of motivations for suicide attempts in these two groups could provide additional information that may help explain observed differences in rates and characteristics. Of note, however, the present work only examines motivations for suicide attempts and is not able to comment on similarities or differences between motivations for suicide attempts and suicide deaths.

### 1.2. Present study

Thus, the primary aim of the current study is to examine measurement and endorsement of motivations for suicide attempts across two novel and divergent samples: 1) hospitalized adults in Canada assessed in person within days of their attempt and 2) community members drawn from across the United States assessed anonymously online multiple years after their attempts. First, the generalizability of the IMSA's psychometric and structural properties across these samples will be examined. Second, the consistency of attempt motivations endorsed across the samples will be compared. Finally, differences in attempt motivations between men and women will be tested.

## 2. Methods

### 2.1. Sample 1: psychiatric inpatients

#### 2.1.1. Procedure

Participants with recent suicide attempts (< 14 days) were recruited from three inpatient psychiatric units of a public hospital in a metropolitan region of western Canada. A suicide attempt was defined as “self-inflicted, potentially injurious behavior with a nonfatal outcome for which there is evidence of intent to die” (Silverman et al., 2007). If participants responded affirmatively to a screening question, the attempt was further assessed with a semi-structured interview. Exclusion criteria included either language or cognitive barriers that prevented completion of the study protocol. Eligible participants provided informed consent before completing questionnaires and the semi-structured interview. The study was approved by the appropriate research ethics boards and was coordinated in consultation with the participants' treatment teams.

#### 2.1.2. Participants

This sample consisted of 59 Canadian adults admitted to psychiatric units due to a suicide attempt. The attempt assessed occurred a median of 3 days before study participation (*IQR* = 2–5). All participants originally presented to the emergency department and were either directly admitted to psychiatric units or were admitted to psychiatric units after medical stabilization in the ICU or other medical unit. Demographic information and suicide history are reported in Table 1 and Table 2, respectively.

### 2.2. Measures

#### 2.2.1. Suicide attempt screening

Possible participants were identified by attending psychiatrists. A research assistant then briefly introduced the study as a project to better understand what brings people to the hospital. Participants were asked whether one of the reasons for hospitalization was that they had “made a suicide attempt with at least some intent to die?”

#### 2.2.2. Demographic and suicide history

A standard demographics form collected information about sex, age, race/ethnicity, sexual orientation, marital status, and education level. An item adapted from the Self Injurious Thoughts and Behaviors Interview (SITBI; Nock et al., 2007) assessed age at first ideation. Details of the most recent attempt were assessed with the Suicide Attempt and Self Injury Interview (SASII; Linehan et al., 2006). Episodes of non-suicidal self-injury were not assessed.

#### 2.2.3. Attempt motivations

The Inventory of Motivations for Suicide Attempts (IMSA; May and Klonsky, 2013) is a 54 item self-report measure used to assess motivations for suicide emphasized by major theories of suicide. Items are rated on a 5-point Likert scale. The IMSA consists of nine scales, each with five items (Hopelessness, Psychache, Escape, Burdensomeness,

**Table 1**  
Demographic information for all participants (N = 281).

	Psychiatric inpatient sample (n = 59)		Online sample (n = 222)	
	Mean	SD	Mean	SD
Age	36	13.92	30	9.04
	N	%	N	%
Sex				
Male	20	34%	96	43%
Female	39	66%	124	56%
Other	0	0%	2	1%
Race/Ethnicity				
African	1	2%	14	6%
East-Asian	12	20%	10	5%
Caucasian/European	31	53%	160	72%
Latino/Hispanic	2	3%	7	3%
Mixed	10	17%	22	10%
Other	3	5%	6	3%
No answer	0	0%	3	1%
Sexual orientation				
Straight (Heterosexual)	48	81%	147	66%
Bisexual	4	7%	53	24%
Gay (Homosexual)	4	7%	14	6%
Questioning	1	2%	3	1%
Other	2	3%	3	1%
No answer	0	0%	2	1%
Marital status				
Single	33	56%	120	54%
Married/common-law	4	7%	78	35%
Divorced/separated	16	27%	16	7%
Widowed	3	5%	0	0%
Other	3	5%	8	4%
Highest level of education				
High school diploma or less	16	27%	34	15%
Some college or university	18	31%	105	47%
College or university graduate	17	29%	63	28%
Some graduate or professional school or greater	8	13%	20	9%
Geographic Location				
United States: Far West	–	–	35	16%
United States: Great Lakes	–	–	37	17%
United States: Mid-Atlantic	–	–	37	17%
United States: New England	–	–	13	6%
United States: Plains	–	–	11	5%
United States: Rocky Mountains	–	–	11	5%
United States: Southeast	–	–	47	21%
United States: Southwest	–	–	31	14%

Low Belongingness, Fearlessness, Help-Seeking, Interpersonal Influence, and Impulsivity) and nine additional items. Previous studies have used the IMSA to assess motivations for suicide and have found good internal consistency as well as good construct validity when compared with other measures of suicide motivation, such as the Reasons for Attempting Suicide Questionnaire (RASQ; Holden et al., 1998; Johns and Holden, 1997; May and Klonsky, 2013; May et al., 2016).

### 2.3. Sample 2: online

#### 2.3.1. Procedure

Participants with a lifetime suicide attempt were recruited online via Mechanical Turk (MTurk), a crowdsourcing Internet marketplace. The study was advertised to members of MTurk who reported they resided in the United States and had demonstrated consistent (i.e., at least 100 tasks completed) and accurate responding on previous MTurk tasks (i.e., 95% or greater approval rate). The study consisted of a screening questionnaire and a full battery of questionnaires, both completed online. The screening questionnaire included questions about suicide ideation and attempt history embedded among other

**Table 2**  
Suicide history for all participants (N = 281).

	Psychiatric inpatient sample (n = 59)		Online sample (n = 222)	
	Median	IQR	Median	IQR
Age of onset of suicidal ideation	16	14–24	13	12–16
Age at most recent suicide attempt <sup>a</sup>	33	23–45	20	16–26
Number of suicide attempts	2	1–4	1	1–2
	N	%	N	%
Required medical treatment following most recent attempt <sup>b</sup>				
No	10	17%	112	51%
Yes	49	83%	108	49%
Method				
Overdose/poisoning	41	70%	135	61%
Cutting/stabbing	5	9%	41	19%
Hanging	6	10%	18	8%
Other method	7	12%	15	7%
Carbon monoxide poisoning	0	0%	5	2%
Automobile crash	0	0%	4	2%
Gun	0	0%	4	2%

<sup>a</sup> Due to a technical error, the age at most recent attempt was only collected for 77% of the online sample.

<sup>b</sup> Two participants did not complete this question in the online sample.

questions about entertainment preferences, sleep quality, and mental health. Participants who endorsed a lifetime history of a suicide attempt were invited to complete the full set of questionnaires in return for further compensation. The full survey included the measures described below. Three validity items were included to assess attention. Participants who failed to answer the validity questions correctly, demonstrated inconsistent responding, or described behaviors inconsistent with the study's definition of a suicide attempt were excluded. Three participants were removed for reporting a suicide attempt during the screening, but reporting zero attempts when more details were requested in the full survey. Electronically endorsed informed consent was obtained from all participants. The study was approved by the University of British Columbia's research ethics board.

#### 2.3.2. Participants

This sample consisted of 222 American adults reporting a history of at least one suicide attempt and completing the IMSA. The attempt assessed occurred a median of 5 years earlier (IQR = 2–11). Demographic information and suicide history are reported in Tables 1 and 2, respectively.

### 2.4. Measures

#### 2.4.1. Suicide attempt screening

In this sample, an item from the Youth Risk Behavior Surveillance Survey (YRBS; Brener et al., 2002; Kolbe et al., 1993) was used to assess a lifetime history of suicide attempt in the screening questionnaire. This question has good to excellent reliability and validity (Brener et al., 2002; May and Klonsky, 2011). Only participants endorsing this item were invited to complete the full questionnaire. In the full questionnaire, another item, based on Silverman et al.'s (2007) definition of a suicide attempt, asked participants to report the number of lifetime attempts ("A suicide attempt is defined as causing injury to yourself with at least some intent to die. How many times have you made an actual suicide attempt in which you had at least some intent to die?"). Only participants reporting one or more attempts on this item were included in analyses.

#### 2.4.2. Demographic and suicide history

A standard demographics form and items adapted from the SITBI were used; see above. Suicide attempt characteristics of the most recent attempt were assessed with items derived from the SASII (Linehan et al., 2006). Interview items were transformed to a self-report version to maintain as much consistency as possible with the SASII interview administered in the inpatient sample.

#### 2.4.3. Attempt motivations

The IMSA (May and Klonsky, 2013) was used to assess suicide attempt motivations for participants' most recent suicide attempt; see above.

### 3. Results

#### 3.1. Psychometric properties: internal consistency and factor structure

Means, standard deviations, endorsement, range, and coefficient alphas of the nine IMSA scales for each sample are reported (Table 3). Across both samples, all nine scales had coefficient alphas greater than 0.70. Correlations among the scales were examined (Table 4). Relationships were generally weak to moderate (median  $r = 0.31$ ). Interpersonal Influence and Help-Seeking were the most highly correlated scales ( $r = .71$  inpatient sample;  $r = 0.77$  online sample;  $ps < .001$ ).

Exploratory rather than confirmatory factor analysis was used to avoid placing limits on the number and nature of factors that could emerge in these novel samples. Principal axis factoring and promax rotation was used. An oblique rather than orthogonal rotation was selected to allow motivations to be correlated, allowing for the likelihood that people may have multiple motivations and that some motivations have substantive or semantic overlap. Bartlett's test of sphericity was significant, indicating there was sufficient collinearity to proceed with a factor analysis. The KMO statistics suggested good sampling adequacy (0.79 inpatient sample; 0.78 online sample). Our sample sizes were guided by work suggesting a ratio of 5–10 participants per variable (i.e., scale) is the minimal threshold for conducting exploratory factor analysis (Bryant and Yarnold, 1995). We exceeded the minimum threshold in the inpatient sample and well exceeded the recommended threshold in the online sample.

Examination of eigenvalues and scree plots revealed a 2-factor structure in both samples (Table 6). The first factor (inpatient sample: accounting for 43% of the variance, eigenvalue = 3.8; online sample: accounting for 39% of the variance, eigenvalue = 3.5) was largely consistent with the Internal Motivations<sup>1</sup> factor identified in previous factor analyses of the IMSA (May and Klonsky, 2013; May et al., 2016). In the inpatient sample, the following six scales loaded (loadings  $\geq 0.40$ ) on to this factor: Hopelessness, Psychache, Escape, Burdensomeness, Low Belongingness, and Fearlessness. In the online sample, the following five scales loaded (loadings  $\geq 0.40$ ) on to this factor: Hopelessness, Psychache, Escape, Burdensomeness, and Fearlessness. Contrary to findings from the inpatient sample and previous studies, in the online sample the Low Belongingness scale was split with low loadings on both factors and thus was not included in either factor.

The second factor (inpatient sample: 18% of the variance, eigenvalue = 1.6; online sample: 21% of the variance, eigenvalue = 1.9) was consistent with the Communication Motivations<sup>2</sup> factor identified

<sup>1</sup> In the original IMSA psychometrics publication (May and Klonsky, 2013) this factor was referred to as "Intrapersonal". The factor was renamed (May et al., 2016) to better reflect the content of the scales that contribute to it and for linguistic simplicity.

<sup>2</sup> In the original IMSA psychometrics publication (May and Klonsky, 2013) this factor was referred to as "Interpersonal". The factor was renamed (May et al., 2016) to better reflect the content of the scales that contribute to it and for linguistic simplicity.

in previous research (May and Klonsky, 2013; May et al., 2016), with the addition of the Impulsivity scale. In both samples, this second factor comprised Interpersonal Influence, Help-Seeking, and Impulsivity.

The scales belonging to each of the two factors were summed to form the Internal Motivations factor (inpatient sample:  $\alpha = .82$ ; online sample:  $\alpha = 0.77$ ) and a Communication Motivations factor (inpatient sample:  $\alpha = 0.72$ ; online sample:  $\alpha = 0.81$ ).

The Internal Motivations and Communication Motivations factors were moderately correlated with each other in both samples ( $r = 0.38$  inpatient sample;  $r = 0.29$  online sample;  $ps < .01$ ). For the purposes of comparison with previous research, a version of the Communication Motivations factor not including the Impulsivity scale was also calculated. It also had a moderate relationship with the Internal Motivations factor ( $r = 0.35$  inpatient sample;  $r = 0.28$  online sample;  $ps < .01$ ).

#### 3.2. Endorsement of motivations: across inpatient and online samples

Across both samples Hopelessness, Psychache, and Escape had the highest mean endorsement and Interpersonal Influence, Help-Seeking, and Impulsivity had the lowest. Two scales were rated at least "important" by over 90% of both samples: Hopelessness (95% inpatient sample; 96% online sample) and Psychache (95% inpatient sample; 91% online sample). The endorsement of three scales differed to a small but statistically significant degree across the samples. Impulsivity ( $t(279) = 2.01, p = .045; d = 0.29$ ) and Fearlessness ( $t(279) = 3.10, p = .002; d = 0.45$ ) were more strongly endorsed by the inpatient sample, while Low Belongingness ( $t(279) = -2.24, p = .026; d = -0.33$ ) was more strongly endorsed by the online sample.

#### 3.3. Endorsement of motivations: sex differences

Sex differences were examined in the online sample. Examination of mean scale endorsement by sex in the online sample revealed few differences regarding motivation endorsement. For both male and female attempters, the Hopelessness, Psychache, and Escape scales received the highest mean endorsement and Interpersonal Influence, Help-Seeking, and Impulsivity scales the lowest. There were statistically significant differences in mean endorsement of two scales when comparing results between male and female attempters (Table 5). Psychache ( $t(218) = -3.87, p < .001; d = -0.53$ ) and Escape ( $t(218) = -2.16, p = .032; d = -0.29$ ) were more strongly endorsed by females. There were no other statistically significant differences in endorsement of scales between males and females in the online sample.

### 4. Discussion

Understanding suicide attempt motivations is critical to developing prevention campaigns and clinical interventions that are responsive to suicidal individuals. The current study tested the functioning of a measure of attempt motivations (the IMSA) in two divergent and previously unexplored populations: inpatient adults assessed in person within days of an attempt and adults assessed anonymously online several years after an attempt. In addition, suicide motivation patterns were compared across samples and, for the first time, between men and women. Results aligned with previous work, suggesting that the IMSA provides reliable information about motivations for attempted suicide across diverse participants and situations, and that those motivations and their structure are generally consistent. Clinically, the ubiquity of psychache (i.e., unbearable mental pain) and hopelessness in motivating suicidal behavior suggests they may be essential targets for any suicide-focused intervention. However, given that all motivations were endorsed to some degree, assessing motivations specific to an individual client with a measure such as the IMSA may also inform the tailoring of the treatment plan to the individual.

Perhaps most noteworthy was the remarkable consistency in the pattern of motivation endorsement across the two samples. Regardless



**Table 3**

Means, standard deviations, endorsement, range, and reliability coefficients for the IMSA scales in the psychiatric inpatient sample and online sample.

Scales	Psychiatric inpatient sample (n = 59)				Online sample (n = 222)			
	M (SD)	Important or higher (%)	Reported Range	$\alpha^a$	M (SD)	Important or higher (%)	Reported Range	$\alpha^a$
Hopelessness	16.2 (3.6)	95%	5–20	.74	15.6 (4.0)	96%	0–20	.82
Psychache	16.1 (4.2)	95%	3–20	.86	15.3 (4.9)	91%	1–20	.90
Escape	13.4 (5.2)	83%	0–20	.80	12.8 (5.1)	82%	0–20	.80
Burdensomeness	9.8 (6.8)	61%	0–20	.91	8.0 (6.3)	49%	0–20	.91
Low Belongingness	7.8 (5.1)	54%	0–18	.77	9.5 (5.3)	63%	0–20	.78
Fearlessness	10.2 (5.2)	73%	0–20	.73	7.8 (5.4)	50%	0–20	.82
Impulsivity	6.8 (5.3)	46%	0–18	.81	5.2 (5.4)	28%	0–20	.85
Interpersonal Influence	2.6 (3.3)	9%	0–14	.78	3.6 (4.8)	21%	0–19	.86
Help-Seeking	6.8 (5.6)	41%	0–18	.83	5.4 (5.3)	33%	0–20	.85

<sup>a</sup> Reliability coefficients were calculated before missing data was imputed.

**Table 4**

Correlations among IMSA scales in the psychiatric inpatient sample and the online sample.

Scales	1	2	3	4	5	6	7	8	9
1. Hopelessness	–	.58	.52	.47	.40	.47	.13	.19	.09
2. Psychache	.56	–	.61	.47	.53	.28	.22	.26	.27
3. Escape	.47	.59	–	.48	.53	.21	.18	.22	.14
4. Burdensomeness	.21	.22	.52	–	.50	.34	.12	.30	.19
5. Low Belongingness	.35	.26	.34	.31	–	.41	.37	.39	.33
6. Fearlessness	.37	.32	.47	.38	.30	–	.21	.34	.21
7. Impulsivity	.00	.08	.18	.30	.23	.14	–	.34	.44
8. Interpersonal Influence	.08	.10	.23	.30	.42	.27	.54	–	.71
9. Help-Seeking	.07	.09	.21	.27	.41	.21	.50	.77	–

Note. Upper triangle comprises correlations from the psychiatric inpatient sample. Correlations from 0.26 to 0.32 are significant at  $p < .05$ . Correlations from 0.33 to 0.46 are significant at  $p < .01$ . Correlations greater than 0.47 are significant at  $p < .001$ . Lower triangle comprises correlations from the online sample. Correlations from 0.14 to 0.17 are significant at  $p < .05$ . Correlations from 0.18 to 0.22 are significant at  $p < .01$ . Correlations greater than 0.23 are significant at  $p < .001$ .

**Table 5**

Comparing sex differences across IMSA scales in the online sample (N = 220).

Scales	Male (n = 96)	Female (n = 124)	d (95% CI)
	M (SD)	M (SD)	
Hopelessness	15.12 (4.24)	15.94 (3.80)	–0.21 (–.47 – 0.06)
Psychache	13.86 (5.25)	16.37 (4.35)	–0.53 (–0.80 to –0.25)***
Escape	12.03 (5.13)	13.51 (4.98)	–0.29 (–0.56 to –0.03)*
Burdensomeness	7.80 (6.25)	8.32 (6.37)	–0.08 (–0.35 – 0.18)
Low Belongingness	9.81 (5.69)	9.31 (4.95)	0.10 (–0.17 – 0.36)
Fearlessness	7.66 (4.98)	7.91 (5.74)	–0.05 (–0.31 – 0.22)
Impulsivity	5.31 (5.16)	5.18 (5.56)	0.03 (–0.24 – 0.29)
Interpersonal Influence	3.75 (4.83)	3.46 (4.80)	0.06 (–0.21 – 0.33)
Help-Seeking	5.27 (5.05)	5.42 (5.49)	–0.03 (–0.29 – 0.24)

Note. Cohen's d effect size reported; \* significant at  $p < .05$ ; \*\*\* significant at  $p < .001$ . Two participants reported gender as “other” and were not included in these analyses.

of whether participants were inpatients or part of a nonclinical sample, responding in person or in an anonymous online setting, reporting on a suicide attempt that occurred a few days or a few years ago, American or Canadian, or identified as male or female, unbearable mental pain and hopelessness were the most commonly endorsed motivations for suicide attempts. Similarly, regardless of sample characteristics, interpersonal influence was the least endorsed motivation. The uniform pattern of motivations was somewhat surprising, as common assumptions posit differences in reasons for suicide, for example, that women

might have more communicative attempt motivations (Canetto and Sakinofsky, 1998) or that motivations would be unique to each individual. However, findings from the IMSA suggest that some attempt motivations are fundamental and apply across almost all people and situations, at least among North American samples.

Across both samples, the individual IMSA scales demonstrated good internal reliability, as did the two superordinate factors identified through factor analysis. The two IMSA superordinate factors captured internal motivations (characterized by needing to escape or relieve unmanageable internal emotions and thoughts) and communication motivations (characterized by a desire to communicate with or influence another individual). These findings, both endorsement patterns and factor structure, are consistent with patterns seen in previous studies of outpatient adult, undergraduate and inpatient adolescent samples (May and Klonsky, 2013; May et al., 2016).

Though the two samples were nearly equivalent in their attempt motivations, three small differences were observed. The inpatient sample endorsed slightly more Fearlessness and Impulsivity motivations than the online sample. The Fearlessness finding may be related to the greater lethality of attempts that result in inpatient hospitalization. This explanation would be consistent with Joiner's (2005) interpersonal theory of suicide which suggests that an increased ability to approach pain and death is an essential element of a serious or lethal suicide attempt. Another explanation, also consistent with the interpersonal theory, is that previous painful and provocative experiences may decrease the fear associated with dying by suicide (Joiner, 2005). Compared to the online participants, the inpatient participants were more likely to have had multiple attempts; thus the previous suicide attempt (s) may have decreased fear surrounding subsequent attempts (Van Orden et al., 2008).

The difference in Impulsivity motivations could be explained by differences between the samples in the time since their attempt. Inpatients participated within hours or days of attempting, while the participants from the online sample participated years after attempting. Those with recent attempts have had less time to reflect on and construct a narrative of their attempt, while those reporting years later may have had that opportunity, perhaps reducing their sense that the attempt came out of the blue. Finally, a small difference in Belongingness was found between samples. Participants in the online sample endorsed low belongingness slightly more as a motivation for suicide attempt compared with participants in the inpatient sample.

Motivations for suicide across sex were largely consistent, however, two differences were observed. Women endorsed psychache and escape as more important motivations for an attempt compared to men. Though these differences were small to moderate in magnitude, this is the first study to our knowledge to test differences in motivations across sex. Future research is necessary to determine whether this pattern replicates.

**Table 6**  
Pattern matrix with a 2-factor solution in the psychiatric inpatient sample and the online sample.

Scales	Psychiatric inpatient sample (n = 59)		Online sample (n = 222)	
	Factor 1 ( $\alpha = .82$ ) Internal Motivations	Factor 2 ( $\alpha = .72$ ) Communication Motivations	Factor 1 ( $\alpha = .77$ ) Internal Motivations	Factor 2 ( $\alpha = .81$ ) Communication Motivations
Hopelessness	<b>.78</b>	-.13	<b>.71</b>	-.14
Psychache	<b>.75</b>	.03	<b>.74</b>	-.13
Escape	<b>.76</b>	-.08	<b>.80</b>	.04
Burdensomeness	<b>.64</b>	.03	<b>.40</b>	.27
Low Belongingness	<b>.60</b>	.24	.35	.36
Fearlessness	<b>.41</b>	.18	<b>.52</b>	.13
Impulsivity	.10	<b>.45</b>	-.02	<b>.60</b>
Interpersonal Influence	.06	<b>.76</b>	-.03	<b>.91</b>
Help-Seeking	-.12	<b>.94</b>	-.05	<b>.86</b>

Note. Factor loadings equal to or greater than 0.40 are bolded.

#### 4.1. Implications for theory and clinical practice

Across samples, over 90% of participants rated unbearable mental pain and hopelessness as motivations that were “important” or “very important” to their attempts, a finding that was not true for other motivations. Though the IMSA was not designed to test a given theory, the results are consistent with a recent theory of suicide. The Three-Step Theory (3ST; Klonsky & May 2015) posits that the interaction of unbearable pain and hopelessness leads to the desire to stop living. Indeed, pain and hopelessness are more strongly associated with suicidal desire than burdensomeness and low belongingness, two constructs that have been theorized to be necessary for the development of ideation (Dhingra et al., 2017; Joiner, 2005; Klonsky & May 2015). The findings presented here are consistent with the 3ST in that unbearable mental pain and hopelessness were more strongly and consistently endorsed attempt motivations than burdensomeness and low belongingness, which were generally moderately and inconsistently endorsed. This pattern suggests that while burdensomeness and low belongingness are two possible painful conditions that can make life feel not worth living, they may not be the only ones. A more fundamental variable, such as unbearable mental pain, may capture distress from other sources as well.

Clinically, understanding the motivations for or functions of suicidal behavior has been identified as an important element of intervention across evidence-based therapies (Dialectical Behavior Therapy; DBT; Linehan, 1993; Collaborative Assessment and Management of Suicidality; CAMS; Jobes, 2012). For example, DBT uses chain analysis to develop a detailed functional understanding of the thoughts, events, and emotions that led to a suicide attempt, while CAMS uses a collaborative assessment to identify and address “drivers” of suicide. Without being part of a specific therapeutic tradition, the IMSA provides a relatively brief, self-report format for beginning to understand the motivations for a patient’s suicidal behavior. Stigma about suicidality may inhibit mental health professionals and patients from asking about or disclosing motivations for attempts. A self-report measure may help bypass barriers to disclosure. While unbearable mental pain and hopelessness appear to be fundamental, the fact that all of the scales were endorsed by at least some participants highlights the value in assessing suicide attempt motivations at the individual level to best tailor interventions.

#### 4.2. Limitations

This project has important limitations that inform directions for future research. First, in the online sample suicide attempts were assessed with two self-report items. Relying on such items can lead to misclassification of suicidal behavior (Hom et al., 2016). Second, participants reported retrospectively on their attempt motivations. While characteristics specific to suicide make it difficult (or impossible) to

measure attempt motivations directly before they occur, it remains important to consider how reporting on motivations after the attempt may shape responses. The lack of systematic difference between the adult inpatient sample, which reported on their attempts much closer to their occurrence, and the online sample suggests minimal effects of time. However, a test retest design is in the best position to assess this question by examining whether self-reported attempt motivations change over time within an individual.

Third, as is true of the majority of suicide research, this study examined motivations for non-lethal suicide attempts; whether these results generalize to fatal suicide attempts is unknown. Future work focusing on individuals who survived highly lethal suicide attempts may more closely approximate lethal suicide behavior. Additionally, it is possible that motivations vary by attempt method, an important consideration for future work.

A fourth limitation of the current study is that although one sample was from Canada and one from the United States, all of the participants were located in North America. To understand whether attempt motivations and their structure are truly universal, cross-cultural studies are required. Finally, it is important to note that the IMSA does not comprehensively measure all motivations emphasized in suicide theory. For example, a recent theory gaining attention is the Integrated Motivational-Volitional model (O’Connor, 2011; O’Connor and Kirtley, 2018) which emphasizes defeat and entrapment. It may be useful in the future to add additional potential motivations as suicide theory continues to develop.

## 5. Conclusion

In sum, the IMSA presents a strong addition to existing instruments for assessing and understanding suicide. Further, consistent results across samples that varied in nationality, time since attempt, and method of assessment provide accumulating evidence for the most common suicide attempt motivations (e.g., unbearable mental pain and hopelessness). The pervasiveness of mental pain and hopelessness suggests potential widely applicable targets for suicide prevention and interventions.

#### CRediT authorship contribution statement

**Alexis M. May:** Conceptualization, Methodology, Formal analysis, Investigation, Writing - original draft. **Mikayla C. Pachkowski:** Formal analysis, Writing - original draft. **E. David Klonsky:** Methodology, Writing - review & editing, Funding acquisition.

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